NEW PRODUCT SELECTION STUDY

INPUT

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NEW PRODUCT SELECTION STUDY

Prepared For:

COMPUTER CONSOLES, INC.

JANUARY 1979

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NEW PRODUCT SELECTION STUDY

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I INTRODUCTION

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A. PURPOSE AND SCOPE

- This report was prepared by INPUT as a custom study for Computer Consoles, Inc. (CCI).
- The objective of this report is to identify and analyze potential new products and markets for CCI.

B. RESEARCH AND METHODOLOGY

- This study began with on-site interviews between CCI and INPUT staff members in Rochester.
- Subsequent research and analysis was performed by INPUT staff.
- INPUT completed the following tasks:
  - Analyzed CCI products.

- Identified CCI's strengths, weaknesses, and biases.

- Identified alternative strategies for CCI to pursue.

- Analyzed potential new product characteristics and degree of fit with CCI.

II EXECUTIVE SUMMARY

II EXECUTIVE SUMMARY

A. MAJOR CONCLUSIONS

- Alternatives identified and studied by INPUT included:
  - Market additional products (either created in-house or acquired from another company) to the same prospect and customer base.
  - Market similar products (to current CCI products) to other industries.
  - Market a functionally oriented product to all industries.
- New products could be obtained through:
  - In-house development.
  - Company acquisition.
  - Joint venture.
  - Licensing arrangements.

- An additional alternative identified, but not studied, is for CCI to sell the company.

B. RECOMMENDATIONS

- The following alternatives have been selected by INPUT as the best prospective strategies for CCI to pursue:
    - Create additional products or improve upon products offered to the telephone companies.
    - Create a specialized processor and related software that will solve a particular industry specific problem.
    - Create an application specific system using off-the-shelf hardware with software tailored to the particular hardware selected.
- The priority ranking of strategies is shown above; that is, the best strategy is number one, the second best strategy is number two, and the third best strategy is number three.
- Within these categories, INPUT has suggested several alternatives which are detailed in Chapter IV and appear (more or less) to fit the biases and constraints felt to be imposed by CCI. Most of these alternatives are a departure for CCI and represent significant investment and risk. In view of this situation, no single product idea stands out as a recommendation at this stage.
- Additional research focused on current prospects and customers, won and lost sales, competition and/or other marketing variables could be performed by INPUT as a follow-on study to this initial strategic perspective. Follow-on studies would provide detailed information for the creation of a business plan.

III CCI STRENGTHS, WEAKNESSES, AND BIASES

III CCI STRENGTHS, WEAKNESSES, AND BIASES

A. CURRENT PRODUCT ASSESSMENT

- The sales cycle is long, but the sales price is high enough to warrant spending time with each prospect. Sales justification is specific easy through return on investment analysis. It enables a salesperson to see if time should be spent with the prospect.

- Engineering/manufacturing are responsive to all current CCI demands. This group may not be prepared to handle other types of processors, especially specialized processors.

- Field marketing and maintenance are responsive to user needs. Additional products of a similar nature could be handled by these groups.

- Products for telephone companies are well designed and operate effectively. Training, however, must be stressed because of the level of knowledge of the ultimate user.

- With virtually all of the revenue coming from one group of customers, CCI is vulnerable to attack from competitors. The telephone companies might become even more competitive with CCI in the future.

- There is a long lead time from order placement to system acceptance by the customer. Many problems could crop up in this 9-10 month cycle, even competitive threats.

B. MANAGEMENT BIASES

- CCI likes the telephone companies and would like to sell more to them.
- CCI does not like to deal with the Government.
- CCI would have concerns about particular industry specialties because of lack of experience in some industries.
- CCI would like to have a standardized or functionally oriented product crossing industry boundaries.
- CCI likes to sell to users who are technically oriented and intelligent employees of large companies. CCI is accustomed to the long sales cycle of selling big systems in the large company environment.
- CCI's timetable to a new product addition is to select it in early 1979, perform market and product development in late 1979 through 1980, and to sell as well as deliver the product in 1981. This means that CCI must make its product decision soon so that additional in-depth research may be performed on a timely basis.

C. OVERALL ASSESSMENT

- The present CCI market is recession resistant. In addition, given the nature of utilities, if cost savings are possible the probability of a sale is increased.

- The maintenance and support team can handle additional products of a similar nature.

- The structure and design of the CCI products would allow large system integration. This capability might translate into some new product in the future.

- The engineering group is responsive, but does not have the creative design capability necessary for specialized processor creation.

- CCI utilizes assembly language for its software. This may ultimately create some software maintenance problems.

- CCI has all of its energies directed toward the telephone company market. This could prove to be a high risk if certain competitive threats materialize.

IV PRODUCT POSSIBILITIES

IV PRODUCT POSSIBILITIES

A. NEW OR IMPROVED PRODUCTS SOLD TO THE CURRENT PROSPECT AND CUSTOMER BASE

- This type of product should allow leverage of the current field marketing and maintenance staff.

- Selling is relatively easy to established accounts as opposed to new accounts. Selling to established accounts can result in excellent sales productivity.

- Adding more products to the line that are sold to the same customer gives the impression of company strength and bigness.

- Profitability of new products, assuming proper pricing, should be very high. This is because of the leverage obtained using an existing organization to sell more products. Products requiring additional resources will not have as high a yield because of the lack of or reduced amount of leverage obtained from the existing organization.

- There is a greater degree of risk in moving into new markets than adding an additional products to the current line. This, of course, assumes that a proper market assessment and product definition have been made prior to the launch of a new product.

- There is a greater risk of having a few customers than in having a large, broadly based group of customers. CCI will have to weigh this risk against the one of moving into new markets.

B. SPECIALIZED PROCESSORS WITH ATTENDANT SOFTWARE TO CREATE A NEW TURNKEY PRODUCT

- There is a need for specialized systems to solve specific problems faster and more efficiently than a general purpose system can. A specialized system would include a special purpose processor and software designed expressly for that processor. Each system would be created for some well-defined task (e.g., structured processing, list processing).

- The price range for a specialized system will be more a function of current processing costs than of costs of hardware and software to create the system. In other words, the prospect for a specialized system will examine how much it currently costs to get the job done; and will then relate this to the cost of the specialized system to determine the measure of necessity of the new system.

- A specialized system can offer more features than a general purpose system. A specialized processor is also better prepared to implement these features through its unique design.

- Risk and profitability of a specialized system would have to be examined in greater detail before general remarks could be substantiated. There would be greater risk in moving into new markets, however, because CCI is geared primarily to the telephone industry marketplace.

C. SPECIALIZED SOFTWARE WITH OFF-THE-SHELF PROCESSOR COMBINED INTO A FUNCTIONALLY ORIENTED SYSTEM

- Systems could be designed to cross industry lines and be totally function oriented. Systems could also be designed that were functionally oriented, but geared to a specific industry.

- The key to these systems is having a large data base of information without requiring a large amount of arithmetic calculation to make the data usable. This will typically mean data bases of names, addresses, skills, or other information tied to a specific name. Name may be of an individual, piece of equipment, drug, etc.

- The specialized software system will, in most cases, be replacing an application already running on a computer. This fact has several important consequences:

    - The current application may have been tailored expressly for the company. As such, it may be difficult to displace by CCI.

    - The current application may be a package from a software vendor, and perhaps already have been fully paid for. The incremental expense required to buy a CCI system may be difficult to cost justify.

    - The computer on which the current application runs may have been cost justified using this particular application as partial reason for its need. If the application was removed, the need for the present computer may be questioned. This area is obviously complex and the the economics are affected by the lease or purchase decision made on the hardware.

D. PRODUCT FIT ASSESSMENT

- A summary of the new product groups studied is shown in Exhibit IV-1. The exhibit indicates the level or degree of a particular product characteristic in each of the three product groups.

- Exhibit IV-2 through IV-4 provide more detailed information on specialized processors that could be packaged as a turnkey product.

- Exhibits IV-5 through IV-10 provide more detailed information on specialized software that could be packaged with off-the-shelf hardware to provide a turnkey product.

EXHIBIT IV-1

PRODUCT FIT ASSESSMENT SUMMARY

PRODUCT CHARACTERISTICS	PRODUCT GROUPS		
	MORE/BETTER PRODUCTS TO TELEPHONE COMPANY	SPECIALIZED PROCESSOR AND SYSTEM	SPECIALIZED SYSTEM APPLICATION
MARKET SIZE AND POTENTIAL	SMALL	MEDIUM	MEDIUM
SYSTEM EVALUATOR / PURCHASER/USER	TOP MGMT./TOP MGMT./WORKERS	TECH. MGMT./TOP MGMT./TECH.	FUNCTIONAL MGMT./TOP MGMT./ALL
INDUSTRY SPECIFIC	YES	YES	NO
PRICE RANGE	~$2M	~$.5M-$2M	~$.1M-$2M
SALE OR LEASE	EITHER	EITHER	EITHER
MAINTENANCE REQUIREMENTS	MEDIUM-HIGH	LOW-MEDIUM	MEDIUM
TRAINING REQUIREMENTS	HIGH	LOW-MEDIUM	MEDIUM-HIGH
SALES CONTACT HEAVIEST WITH	TOP MGMT.	TECH. AND TECH. MGMT.	FUNCTIONAL MGMT.
TECHNOLOGICAL COMPONENT	LOW-MEDIUM	HIGH	LOW
TECHNICAL/FUNCTIONAL COMPONENT	LOW	HIGH	MEDIUM
COST JUSTIFICATION DIFFICULTY	LOW	MEDIUM-HIGH	HIGH
SALES CYCLE	6-12 MONTHS	4-8 MONTHS	6-12 MONTHS
DEGREE OF FIT WITH CCI	HIGH	VERY LOW	LOW-MEDIUM
IMPORTANCE OF HARDWARE	LOW-MEDIUM	VERY HIGH	LOW
IMPORTANCE OF SOFTWARE	LOW-MEDIUM	LOW-MEDIAN	HIGH
DATA USAGE	RETRIEVAL	COMPUTATION	UPDATE/ RETRIEVAL

EXHIBIT IV-2

STRUCTURAL PROCESSOR SYSTEM CHARACTERISTICS

- A fast 64 bit processor to handle numerical calculations is needed. The characteristics of this type of activity is a low level of input, a medium to high level of output, and a very high level of processing. The level of accuracy must be very high (hence, the 64 bit processor).

- The work typically performed involves the solving of many equations to arrive at the key solutions to the problem.

- The type of software system that we are referring to already has been written in FORTRAN and currently runs on many computer service networks. The system, NASTRAN, would have to be re-engineered to work with a special purpose processor.

- The main benefit that a company would receive from having his own in-house special purpose system is the cost savings that could be obtained by not having to use an outside service company, or by the savings in computer time that would accrue in not having to run the NASTRAN package on the in-house general purpose computer.

EXHIBIT IV-3

DATA BASE BACKEND PROCESSOR SYSTEM CHARACTERISTICS

- A data base backend processor system is one part of a total data base management system (DBMS). The specific characteristics of the ideal backend processor have not been determined, but the goal of such a processor is to offload the main computer and to perform as many tasks as are possible in the special processor.

- Specific benefits that could accrue to a backend processor include:

  - Offload the host.

  - Improved overall DBMS cost performance.

  - Enhanced data security.

  - Data base sharing.

  - Identifiable hardware specific to DBMS.

  - Distributed processing availability.

  - Provides consistency between the operating system and compilers.

- Hardware specifically designed to interface with a data base will be more efficient and operate faster than a general purpose computer with a DBMS. The general purpose computer, when freed of DBMS activity, will be more responsive to other assigned tasks.

EXHIBIT IV-4

LIST PROCESSOR SYSTEM CHARACTERISTICS

- A list processor is one that is designed to work effectively with lists of data. Although there are many list processing applications, the most common is in the area of information retrieval.

- A specialized list processor would have hardware handling of certain input, output, and selected processing functions. Placing these functions in the hardware would increase speed of execution in order to improve system efficiency.

- Information retrieval generally involves large quantities of data to be retrieved or at least examined prior to retrieval. Pointers to selected fields are created to minimize the time required to find a particular piece of data. The list processor could automate the retrieval of as well as the creation of these pointers.

EXHIBIT IV-5

GAS, ELECTRIC, WATER UTILITY SYSTEM CHARACTERISTICS

- Many customers, large data base, frequent updates are required.
- Customers need reminders to pay their bills.
- Customers don't need and shouldn't have access to data other than what is in his/her own file.
- Billing and balance information will change more frequently than name, address, and phone contact information.

EXHIBIT IV-6

PERSONNEL/HUMAN RESOURCES SYSTEM CHARACTERISTICS

- Could maintain inventory of employees, address information, educational and vocational skills, vocation and sick leave accrued/used, etc. This data base would be very large for many companies; however, it could be segmented by office/plant location if desired or required.

- Government reports (OSHA, ERISA, etc.) could be provided as a standard feature of the system. Although the government would change the format of the reports from time to time, it would affect all companies equally and at the same time.

- This system could be designed in a modular fashion with each module containing certain defined features. The more features, the higher the cost of the system.

- Personnel area may not be able to cost justify a large enough system to make this area attractive for a dedicated system.

EXHIBIT IV-7

PURCHASING AND INVENTORY SYSTEM CHARACTERISTICS

- This system could allow tracking of all resources from time of order placement, through processing, to shipment, and finally through collection of receivables. The system could identify the location and status of parts, orders or other assets. Accounts payable and inventory functions could also be a part of overall system.

- Buyer efficiencies could be measured and tracked.

- Multiple terminals could be utilized in all affected areas such as shipping/receiving, purchasing, accounting, assembly, warehouse, distribution, management, etc. Each workstation could enter or review information that would be relevant for the particular group.

- A system of this type could probably be cost justified through better tracking and accountability, improved asset (including cash flow) management, reduced personnel requirements, and the like.

EXHIBIT IV-8

FILE CONTROL AND ORGANIZATION SYSTEM CHARACTERISTICS

- This system could be a complete system for handling and directing the flow of information between departments within a company. The system could enforce filing conventions and procedures for entering as well as retrieving information.

- The system could combine word processing and copying services to produce an efficient and least cost method of entry and dispersement. Each department could have its own control station for directing flow. Word processing centers for input or output could be established on an as-required basis.

- An integral part of the system could include a capability for automated file lookup. This would allow someone to find where a particular file is located, where particular subjects are filed, and where particular subjects should be filed.

EXHIBIT IV-9

TRANSPORTATION SYSTEM CHARACTERISTICS

- This system would involve the manipulation of a large data base of information on route structures and rates. Candidates for this type of system would include the trucking companies, overseas shippers, and airlines.
- The operation of the system could be as simple or complex as the prospects could afford. On the low end, the system would simply display route and rate information based on information a trained operator would enter into the system. On the upper end, the system would respond to commands from the individuals desiring route and rate information. This type of data entry could be handled by phone or terminal depending on the degree of sophistication needed.
- A potential problem with systems in this area is that there is a small number of companies who could cost justify such an expenditure for a dedicated computer system.

EXHIBIT IV-10

INSURANCE SYSTEM CHARACTERISTICS

- An insurance system would maintain policy and policy holder information. In addition to name, address, policies held, etc., it could also keep track of rates and account balances.

- This system could have many modules to it. One, for example, could handle new policy holders; another could process address, policy or account balance changes; a third could handle account inquiries. In this way, a complete system encompassing all aspects of the insurance system papermill could be created.

- An integral part of such a system would be the timely management information that could be provided on a real time basis. These reports could be provided by workstations located in the required strategic area.

V MARKET DIMENSIONS

V MARKET DIMENSIONS

A. MARKET SIZE

- An important question facing CCI is how many establishments could support a $2 million system. There are many ways of estimating this, but INPUT has chosen one where the data appears fairly reliable.

    - A $2 million system purchase is equal to a $600,000 per year lease (assuming a 40 month payout).

    - Approximately 30% of the EDP budget is spent on hardware. This means that the installation that spends $600,000 per year on hardware was a $2 million per year EDP budget.

    - Data is available, by business category, for EDP budget as a percent of sales and for sales per employee. Given an EDP budget amount, an EDP budget as a percent of sales and sales per employee, we can calculate the employees per establishment using the following formula:

        Employees/Establishment =
        EDP Budget
        ÷ EDP Budget as a percent of sales
        ÷ Sales/Employee

  - The employee per establishment figure should be interpreted as the expected number of employees that the average company would have given that the company is supporting a $2 million per year EDP budget. Exhibit V-1 shows this calculation.

  - By comparing the calculated employees per establishment with the U.S. census figure of number of businesses having 1,000 or more employees, we can estimate the maximum market potential for a system serving a particular industry. Exhibit V-2 presents this data in summary form.

- The data in Exhibit V-2 indicates that the market size is relatively small for all industry sectors. If we had the actual census data for businesses broken down in more detail we could be more exact, but a fair estimate is between 500 and 1,000 companies meet the criteria of having an EDP budget of $2 million a year or greater (across all industry sectors).

B. MARKET SEGMENTS

- A forecast for the computer services market is shown in Exhibit V-3. Note the size and growth anticipated in nearly every market.

- Minicomputer and small business computer shipments by industry and application are shown in Exhibits V-4 and V-5, respectively. The average value per shipment is low, but the numbers and dollar volume are large.

- Applications to be developed as planned for by EDP managers is shown in Exhibit V-6. Note the large percent of people planning to develop a personnel related system or a purchasing/order entry/billing/inventory control system.

EXHIBIT V-1

EMPLOYEES PER ESTABLISHMENT CALCULATION

INDUSTRY SECTOR	EDP BUDGET	EDP BUDGET AS A PERCENT OF SALES	SALES PER EMPLOYEE	EMPLOYEES PER ESTABLISHMENT
MANUFACTURING	$2M	1.00%	$50K	4,000
UTILITIES	2M	0.75	60K	4,440
DISTRIBUTION/ RETAILING	2M	0.50	50K	8,000
BANKING/FINANCE	2M	1.00	*1,250K	160
INSURANCE	2M	1.50	60K	2,000

*ASSETS PER EMPLOYEE

EXHIBIT V-2

MARKET SIZE ESTIMATE BY INDUSTRY

INDUSTRY SECTOR	CALCULATED EMPLOYEES PER ESTABLISHMENT	U.S. CENSUS FIGURES FOR NUMBER OF COMPANIES WITH OVER 1,000 EMPLOYEES
MANUFACTURING	4,000	2,159
UTILITIES	4,400	* 398
DISTRIBUTION/RETAILING	8,000	212
BANKING FINANCE	160	87
INSURANCE	2,000	127

*TRANSPORTATION AND OTHER PUBLIC UTILITIES

EXHIBIT V-3

COMPUTER SERVICES MARKET FORECAST BY INDUSTRY SECTOR, 1978-1983

INDUSTRY SECTOR	MARKET FORECAST BY INDUSTRY SECTOR, 1978-1983								
	1977 ($M)	1978 ($M)	GROWTH 1978/ 1977 (%)	1979 ($M)	1980 ($M)	1981 ($M)	1982 ($M)	1983 ($M)	AAGR 1983/ 1978 (%)
DISCRETE MANUFACTURING	$ 890	$1,047	18%	$1,211	$ 1,399	$ 1,630	$ 1,860	$ 2,145	15%
PROCESS MANUFACTURING	510	597	17	655	782	900	1,030	1,188	15
TRANSPORTATION	169	200	18	225	266	311	360	419	16
UTILITIES	275	325	18	359	409	462	530	600	13
BANKING & FINANCE	1,130	1,638	23	1,805	2,161	2,570	2,965	3,481	16
INSURANCE	480	558	16	655	736	830	970	1,102	15
MEDICAL	430	489	14	580	659	760	885	1,021	16
EDUCATION	132	151	14	175	196	226	250	285	14
RETAIL	440	527	20	600	700	815	950	1,100	16
WHOLESALE	425	493	16	545	630	730	830	930	14
FEDERAL GOVERNMENT	860	1,015	18	1,190	1,380	1,625	1,900	2,230	17
STATE & LOCAL GOVERNMENT	265	305	15	360	415	495	570	660	17
SERVICES	306	388	27	435	533	611	715	800	16
OTHER	323	375	16	420	490	560	650	745	15
TOTAL	$6,635	$8,108	19%	$9,225	$10,756	$12,525	$14,465	$16,706	17%

SOURCE: USER PLANNING SERVICE, 1978 ANNUAL REPORT, INPUT, November 1978, page 34.

EXHIBIT V-4

MINICOMPUTER AND SBC SYSTEM SHIPMENTS BY INDUSTRY-U.S./NON-GOVERNMENT

(1977 AND 1982)

INDUSTRY	1977		1982	
	UNITS (K)	$(MILLIONS)	UNITS (K)	$(MILLIONS)
(1) AGRICULTURE	-	-	-	-
(2) MINING	<1	4-6	<1	12-18
(3) CONSTRUCTION	1	40-60	3	150-200
(4) MANUFACTURING, DISCRETE	20-25	700-850	55-60	2,000-2,200
(5) MANUFACTURING, PROCESS	15-20	500-700	50-55	1,600-2,000
(6) WHOLESALE DISTRIBUTION	1-2	80-120	8-10	400-450
(7) RETAIL DISTRIBUTION	4-6	150-200	20-25	700-750
(8) FINANCE	1	30-50	3-4	150-200
(9) HEALTH	2-3	90-130	8-12	420-480
(10) HOTELS	<1	8-12	1	40-60
(11) EDUCATION	1-2	70-110	3	220-260
(12) INSURANCE	1	20-40	4	150-200
(13) LEGAL/ACCOUNTING	<1	4-6	<1	20-30
(14) TRANSPORTATION	1-2	60-90	9-10	250-300
(15) UTILITIES	3-4	90-130	9-12	325-375
TOTALS	60	2,150	190	7,000

SOURCE: SMALL SYSTEMS MARKET OPPORTUNITIES, INPUT, February 1978, page 18.

EXHIBIT V-5

MINICOMPUTER AND SBC SYSTEM SHIPMENTS BY APPLICATION-U.S./NON-GOVERNMENT

(1977 AND 1982)

APPLICATION	1977		1982	
	UNITS (K)	$ (MILLIONS)	UNITS (K)	$ (MILLIONS)
(A) GENERAL BUSINESS D.P.	30-40	800-1,200	125-150	4,000-4,200
(B) COMMUNICATIONS	3-5	200-225	10-15	500-700
(C) DESIGN/DRAFTING	>1	40-60	3-5	150-250
(D) EDP SUPPORT	4-6	200-225	10-15	400-600
(E) INDUSTRIAL CONTROL	10-15	240-280	25-50	600-700
(F) INSTRUCTIONAL	1-3	100-120	3-5	200-250
(G) SCIENTIFIC/LAB	5-8	225-275	15-25	600-650
(H) SPECIAL DATA ACQUISITION/CONTROL	1-2	40-60	3	75-125
TOTALS	60	2,150	190	7,000

SOURCE: SMALL SYSTEMS MARKET OPPORTUNITIES, INPUT, February 1978, page 21.

EXHIBIT V-6

APPLICATIONS TO BE DEVELOPED BY RESPONDING EDP MANAGERS

NEW APPLICATIONS TO BE DEVELOPED IN THE NEXT TWO YEARS	DISCRETE MANUFACTURING	PROCESS MANUFACTURING	TRANSPORTATION	UTILITIES	BANKING & FINANCE	INSURANCE	EDUCATION	RETAIL	WHOLESALE
ACCOUNTING & FINANCE	18%	20%	20%	17%	17%	15%	21%	19%	21%
MARKETING & SALES	5	5	2	0	2	5	0	8	2
SCIENTIFIC & ENGINEERING	0	1	4	3	0	1	1	0	2
WORD PROCESSING	1	1	0	0	0	0	1	0	0
PERSONNEL RELATED/ PAYROLL	7	12	15	11	5	7	11	16	5
INVENTORY CONTROL	9	10	9	11	3	2	6	19	26
COST SYSTEMS	5	5	6	3	2	1	1	0	0
ORDER ENTRY/ BILLING	14	16	4	5	1	2	3	10	18
MODELLING & FORECASTING	3	3	0	9	1	1	6	2	4
DATA BASE APPLICATIONS	3	5	4	19	9	8	8	5	5
PERFORMANCE	1	0	0	0	0	0	0	0	0
GRAPHICS	1	1	0	0	1	0	3	0	0
PURCHASING	6	4	0	2	0	0	3	6	5
OTHER (INDUSTRY SPECIFIC)	28	17	37	20	59	58	37	16	12

SOURCE: COMPUTER SERVICES INDUSTRY, 1978 ANNUAL REPORT, INPUT, November 1978, page 68.

C. MARKET FORCES

- With the high prime rate, management must focus its attention on asset management. This will include better collection procedures, cash flow forecasting, inventory turnover, purchasing control, etc.

- Improved computer hardware with better price/performance will be closely examined.

- More people are becoming more knowledgeable and aware of EDP, its uses, problems and opportunities.

- Higher wages, including minimum wage, will force business to find ways to automate more tasks. This is especially true in the areas of wholesale and retail distribution, banking, insurance, health care services, state/local government, and restaurant/hospitality/hotel management.

D. COMPETITIVE ENVIRONMENT

- Most medium to large computer services bureau organizations offer the NASTRAN structural design system. The disadvantage of using NASTRAN on an extended basis with a service organization is the cost of computing. NASTRAN uses many computer resources and takes a long time to run.

- There are five to ten data base management software packages available, but as yet, no hardware to do back-end data base functions.

- There are at least ten software packages available to handle some of the personnel functions. There does not appear to be a clear cut leader in this field and no single package performs all desired functions.

- There are no comprehensive purchasing/inventory control/order entry packages available. Several companies have made attempts in this area, but no major successes have been claimed.

- At least 50 vendors are involved in the word processing area, although none yet have developed a system for handling file control and organization. IBM has about 70% of the market and is the obvious industry leader.

- The key industry leaders are shown in Exhibit V-7. There are really no software vendors that can be considered to be industry leaders per se. The software market is highly fragmented and its composition changes frequently.

EXHIBIT V-7

THE KEY VENDORS TO WATCH

VENDOR	EDP EQUIPMENT	EDP EQUIPMENT	OFFICE TEXT PROCESSING	COPYING OR FACSIMILE	COMMUNICATIONS EQUIPMENT	COMMUNICATIONS SERVICES
ADP	●	●				
AT&T	●				●	●
BURROUGHS	●	●	●	●		
CDC	●	●				
CSC		●				
DATA GENERAL	●					
DEC	●		●			
EXXON	●		●	●		
GTE	●	●			●	●
HARRIS	●		●	●		
HONEYWELL	●	●	●			
IBM	●	●	●			●
ITT	●				●	●
KODAK	●			●		
3M	●		●	●		
MAI	●		●			
NCR	●	●				
NATIONAL CSS	●	●				
NORTHERN TELECOM	●				●	
TYMSHARE		●				●
UNITED TELECOMMUNICATIONS		●				●
UNIVAC	●					
WANG	●		●			
XEROX	●	●	●	●		

SOURCE: SMALL ESTABLISHMENT SERVICE, ANNUAL REPORT, October 1978, page 82.